

IN THE CLAIMS:

Please amend the claims as follows:

1. to 3. (Cancelled)

4. (Currently Amended) A method of searching a database comprising a plurality of information entries to identify information to be retrieved therefrom, each of said plurality of information entries having an associated annotation lattice, the method comprising:

receiving a query lattice representing an input query;

comparing the query lattice with each annotation lattice to provide a set of comparison results; and

identifying said information to be retrieved from said database using the set of comparison results,

wherein the query lattice and each annotation lattice define alternative label sequences that represent a sequential signal, and each lattice comprises a plurality of nodes each associated with one or more labels and representing a point in the sequential signal at which the associated label occurs,

wherein the query lattice is compared with each annotation lattice by propagating a plurality of paths, each path representing a comparison between labels in the query lattice and labels in the annotation lattice, and each path having an associated accumulative value representing the closeness of the comparison,

wherein during the path propagation, said comparing step defines, for each node in the query lattice, a plurality of associated storage areas, each storage area associated with a query lattice node also being associated with a respective node in the annotation lattice and being operable to store, during the path propagation, an accumulative value representing the closeness of the comparison between labels in the query lattice up to the associated query lattice node and labels in the annotation lattice up to the associated annotation lattice node,

wherein said comparing step uses said storage areas during the propagation of said paths, and

A method according to claim 1; wherein when propagating a path from a source node in said first query lattice to a destination node in said first query lattice, said comparing step updates and propagates accumulative values stored in the storage areas associated with the source node to at least the storage areas associated with the destination node.

5. (Original) A method according to claim 4, wherein during the propagation of said accumulative values, said comparing step compares the appropriate accumulative value in the storage area associated with the destination node with the updated accumulative value from the storage area associated with the source node.

6. (Original) A method according to claim 5, wherein said comparing step replaces the accumulative value in the storage area associated with the destination node with the updated accumulative value from the storage area associated with the source

node if the updated accumulative value is better than the accumulative value stored in the storage area associated with the destination node.

7. (Currently Amended) A method according to claim 4, wherein said comparing step updates the accumulative values stored in the storage areas associated with the source node to take into account for substitution of the corresponding labels in the first query lattice and the corresponding labels in the second annotation lattice.

8. to 9. (Cancelled)

10. (Currently Amended) A method according to claim 4, wherein said comparing step updates the accumulative value stored in the storage areas associated with the source node to take into account the substitution, insertion and deletion of labels from the first query lattice and/or second annotation lattice and wherein the storage area to which an updated score is propagated depends upon whether a label is substituted, inserted or deleted from the first query lattice and/or the second annotation lattice.

11. (Currently Amended) A method according to claim 4, wherein said comparing step updates the accumulative values stored in the storage areas associated with the source node by comparing the corresponding labels in the first query lattice with the corresponding labels in the second annotation lattice.

12. (Original) A method according to claim 11, wherein said comparing step updates said accumulative values by using predetermined confusion data which defines measures of confusability between the different labels.

13. (Currently Amended) A method according to claim 4, wherein said first query lattice is generated by a recognition unit and includes confidence data associated with said labels indicative of the confidence that said recognition unit correctly recognised the label and wherein said comparing step updates said accumulative values stored in the storage areas associated with the source node using the confidence data [[fro]] from the corresponding labels.

14. (Currently Amended) A method according to claim 13, wherein both said first query and second annotation lattices include said confidence data and wherein said comparing step updates said accumulative values using the confidence data for the respective labels from the first query and second annotation lattices.

15. to 19. (Cancelled)

20. (Currently Amended) A method of searching a database comprising a plurality of information entries to identify information to be retrieved therefrom, each of said plurality of information entries having an associated annotation lattice, the method comprising:

receiving a query lattice representing an input query;

comparing the query lattice with each annotation lattice to provide a set of comparison results; and

identifying said information to be retrieved from said database using the set of comparison results,

wherein the query lattice and each annotation lattice define alternative label sequences that represent a sequential signal, and each lattice comprises a plurality of nodes each associated with one or more labels and representing a point in the sequential signal at which the associated label occurs,

wherein the query lattice is compared with each annotation lattice by propagating a plurality of paths, each path representing a comparison between labels in the query lattice and labels in the annotation lattice, and each path having an associated accumulative value representing the closeness of the comparison,

wherein during the path propagation, said comparing step defines, for each node in the query lattice, a plurality of associated storage areas, each storage area associated with a query lattice node also being associated with a respective node in the annotation lattice and being operable to store, during the path propagation, an accumulative value representing the closeness of the comparison between labels in the query lattice up to the associated query lattice node and labels in the annotation lattice up to the associated annotation lattice node,

wherein said comparing step uses said storage areas during the propagation of said paths,

wherein the method further comprises a processing step of processing accumulative values stored for a node to determine a similarity measure representing the similarity between the query and annotation lattices, and  
A method according to claim 19, wherein the second annotation lattice represents a longer sequence than the first query lattice and wherein the processing step processes the accumulative values stored for the node to determine if the second annotation lattice includes one or more portions similar to the first query lattice.

21. (Currently Amended) A method according to claim 20, wherein said processing step compares the accumulative values in the storage areas of the node to identify values better than a predetermined threshold, to identify said one or more portions in the second annotation lattice which are similar to the first lattice.

22. (Original) A method according to claim 21, wherein said processing step identifies said one or more portions by identifying the storage areas having an accumulative value better than said threshold.

23. (Currently Amended) A method according to claim 21 or 22, wherein the sequence length of the first query lattice is known, wherein when said processing step identifies an accumulative value better than said threshold, the second annotation lattice node associated with the identified accumulative value represents the end of said portion corresponding to said first query lattice and wherein said processing step

estimates a beginning of the portion within the second annotation lattice using the known sequence length of the first query lattice.

24. to 25. (Cancelled)

26. (Currently Amended) A method according to claim 4 ~~[[1]]~~, wherein the storage areas associated with nodes in the query lattice are stored in a plurality of node tables, and each of the storage areas associated with a node in the first query lattice are stored in a node table associated with the respective first query lattice node.

27. (Original) A method according to claim 26, wherein said storage areas in said node tables are arranged in a sequential order defined by the sequential order of the associated nodes.

28. to 35. (Cancelled)

36. (Currently Amended) An apparatus for searching a database comprising a plurality of information entries to identify information to be retrieved therefrom, each of said plurality of information entries having an associated annotation lattice, the apparatus comprising:  
a receiver operable to receive a query lattice representing an input query;  
a lattice comparison apparatus for comparing the query lattice with each annotation lattice to provide a set of comparison results; and

an identifier operable to identify said information to be retrieved from said database using the set of comparison results provided by the lattice comparison apparatus,

wherein the query lattice and each annotation lattice define alternative label sequences that represent a sequential signal, and each lattice comprises a plurality of nodes each associated with one or more labels and representing a point in the sequential signal at which the associated label occurs,

wherein the query lattice is compared with each annotation lattice by propagating a plurality of paths, each path representing a comparison between labels in the query lattice and labels in the annotation lattice, and each path having an associated accumulative value representing the closeness of the comparison,

wherein during the path propagation, said comparator is operable to define, for each node in the query lattice, a plurality of associated storage areas, each storage area associated with a query lattice node also being associated with a respective node in the annotation lattice and being operable to store, during the path propagation, an accumulative value representing the closeness of the comparison between labels in the query lattice up to the associated query lattice node and labels in the annotation lattice up to the associated annotation lattice node,

wherein said comparator is operable to use said storage areas during the propagation of said paths,

An apparatus according to claim 31, wherein when propagating a path from a source node in said first query lattice to a destination node in said first query lattice, said comparator is operable to update and to propagate accumulative values stored in the storage areas



associated with the source node to at least the storage areas associated with the destination node.

37. (Previously Presented) An apparatus according to claim 36, wherein during the propagation of said accumulative values, said comparator is operable to compare the appropriate accumulative value in the storage area associated with the destination node with the updated accumulative value from the storage area associated with the source node.

38. (Previously Presented) An apparatus according to claim 37, wherein said comparator is operable to replace the accumulative value in the storage area associated with the destination node with the updated accumulative value from the storage area associated with the source node if the updated accumulative value is better than the accumulative value stored in the storage area associated with the destination node.

39. (Currently Amended) An apparatus according to claim 36, wherein said comparator is operable to update the accumulative values stored in the storage areas associated with the source node to take into account for substitution of the corresponding labels in the first query lattice and the corresponding labels in the second annotation lattice.

40. to 41. (Cancelled)

42. (Currently Amended) An apparatus according to claim 36, wherein said comparator is operable to update the accumulative value stored in the storage areas

associated with the source node to take into account the substitution, insertion and deletion of labels from the first query lattice and/or second annotation lattice and wherein the storage area to which an updated score is propagated depends upon whether a label is substituted, inserted or deleted from the first query lattice and/or the second annotation lattice.

43. (Currently Amended) An apparatus according to claim 36, wherein said comparator is operable to update the accumulative values stored in the storage areas associated with the source node by comparing the corresponding labels in the first query lattice with the corresponding labels in the second annotation lattice.

44. (Previously Presented) An apparatus according to claim 43, wherein said comparator is operable to update said accumulative values by using predetermined confusion data which defines measures of confusability between the different labels.

45. (Currently Amended) An apparatus according to claim 36, wherein said first query lattice is generated by a recognition unit and includes confidence data associated with said labels indicative of the confidence that said recognition unit correctly recognised the label and wherein said comparator is operable to update said accumulative values stored in the storage areas associated with the source node using the confidence data for the corresponding labels.

46. (Currently Amended) An apparatus according to claim 45, wherein both said first query and second annotation lattices include said confidence data and wherein said comparator is operable to update said accumulative values using the confidence data for the respective labels from the first query and second annotation lattices.

47. to 51. (Cancelled)

52. (Currently Amended) An apparatus for searching a database comprising a plurality of information entries to identify information to be retrieved therefrom, each of said plurality of information entries having an associated annotation lattice, the apparatus comprising:

a receiver operable to receive a query lattice representing an input query;

a lattice comparison apparatus for comparing the query lattice with each annotation lattice to provide a set of comparison results; and

an identifier operable to identify said information to be retrieved from said database using the set of comparison results provided by the lattice comparison apparatus.

wherein the query lattice and each annotation lattice define alternative label sequences that represent a sequential signal, and each lattice comprises a plurality nodes each associated with one or more labels and representing a point in the sequential signal at which the associated label occurs,

wherein the query lattice is compared with each annotation lattice by propagating a plurality of paths, each path representing a comparison between labels in the

query lattice and labels in the annotation lattice, and each path having an associated accumulative value representing the closeness of the comparison,

wherein during the path propagation, said comparator is operable to define, for each node in the query lattice, a plurality of associated storage areas, each storage area associated with a query lattice node also being associated with a respective node in the annotation lattice and being operable to store, during the path propagation, an accumulative value representing the closeness of the comparison between labels in the query lattice up to the associated query lattice node and labels in the annotation lattice up to the associated annotation lattice node,

wherein said comparator is operable to use said storage areas during the propagation of said paths,

wherein the apparatus further comprises a processor operable to process the accumulative values stored for a node to determine a similarity measure representing the similarity between the query and annotation lattices, and

An apparatus according to claim 51, wherein the second annotation lattice represents a longer sequence than the first query lattice and wherein the processor is operable to process the accumulative values stored for the node to determine if the second annotation lattice includes one or more portions similar to the first query lattice.

53. (Currently Amended) An apparatus according to claim 52, wherein said processor is operable to compare the accumulative values in the storage areas of the node to identify values better than a predetermined threshold, to identify said one or more portions in the second annotation lattice which are similar to the first query lattice.

54. (Previously Presented) An apparatus according to claim 53, wherein said processor is operable to identify said one or more portions by identifying the storage areas having an accumulative value better than said threshold.

55. (Currently Amended) An apparatus according to claim 53, wherein the sequence length of the first query lattice is known, wherein when said processor identifies an accumulative value better than said threshold, the second annotation lattice node associated with the identified accumulative value represents the end of the said portion corresponding to said first query lattice and wherein said processor is operable to estimate a beginning of the portion within the second annotation lattice using the known sequence length of the first query lattice.

56. to 57. (Cancelled)

58. (Currently Amended) An apparatus according to claim 36 ~~[[31]]~~, wherein the storage areas associated with nodes in the query lattice are stored in a plurality of node tables, and each of the storage areas associated with a node in the first query lattice are stored in a node table associated with the respective first query lattice node.

59. (Previously Presented) An apparatus according to claim 58, wherein said storage areas in said node tables are arranged in a sequential order defined by the sequential order of the associated nodes.

60. to 61. (Cancelled)

62. (Currently Amended) An apparatus according to claim 36 ~~[[60]]~~, wherein said set of comparison results includes at least one score representing the similarity between the query lattice and each annotation lattice and wherein said identifier is operable to identify the N most relevant information entries by ranking the scores within said set of comparison results to identify the N-best scores.